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METHODS

FOR THE

COMPUTATION FROM DIAGRAMS

OF

PRELIMINARY AND FINAL ESTIMATES

OF

RAILWAY EARTHWORK,

WITH DIAGRAMS

GIVING QUANTITIES ON INSPECTION TO THE NEAREST CUBIC YARD, FOR BOTH REGULAR AND IRREGULAR SECTIONS, DIRECT FROM ORDINARY FIELD-NOTES.

BY ARTHUR M. WELLINGTON,
CIVIL ENGINEER.

PART II.—PLATES.

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IV.— “ “ “ 20, “ 1½ TO 1.
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TABLE OF REFERENCE.

The table below is added to facilitate reference to the text, or to render frequent reference unnecessary. The third, fourth, and fifth columns give the quantities on each of the plates which are represented by the vertical, inclined, and horizontal lines respectively, and, by interpolating the words in parentheses below, may be made substantially equivalent to the rule for use given in the text. Thus, for the Diagram of Cross-Sections, read as follows:

"(Take the) vertical line representing width of section on top, (and follow up to the) inclined line representing the centre-height. The horizontal lines give quantity sought in cubic yards."

The general rule for the use of every one of the diagrams in the table may be similarly read off by the interpolation of the same words.

The remaining columns of the table give references to the text for the formulæ, and a few of the rules, etc., which it may be most frequently necessary to consult. For more detailed references, the table of contents in the text must be consulted.

PLATE.	DIAGRAM OF—	VERTICAL LINES represent—	INCLINED LINES represent—	HORIZONTAL LINES give Quantity sought in—	FORMULA.		GENERAL RULE FOR USE.		Indirect Applica'ns to other road-beds.		When given Dimensions exceed limits of Diagram.		MISCELLANEOUS RULES.		
					equa.	page	par.	page	par.	page	par.	page		par.	page.
I. to VI.	Cross-Sections.	Width of Section on top.	Centre-Height.	Cubic Yards.	(5),	16	21,	20	105,	99	22, 23,	23 25	To reduce to Level Section.	24,	26
VII.	Side-Hill Cross-Sections.	" "	" "	" "	(7) to (9),	29	30,	32	107,	102					
VIII.	Triangular Prisms.	Horizontal dimension.*	Vertical dimension.*	" "	(19),	46	51,	46	(*General*)		52,	47	Special Rules for Computation.	52,	47
IX.	Prismoidal Correction.	Width of Section on top.	Centre-Height.	" "	(16),	38	43,	43	108,	102	46,	45	Method of Centre-Heights.	41, 45,	42 44
"	Correction on Curves	" "	Differ'nce of distances out.	Feet and tenths.	(29),	77	82,	79	(*General*)				For Sidings and Borrow-Pits.	84–87,	81
"	" "	Solidity for Section.	" "	Cubic Yards.	(32),	78	83,	80	(*General*)						
"	Slope-Stakes.	Centre-heig'ts	Surface-Slope.	Feet and tenths.	(34), (35),	85	91,	86	110,	104			Side-Hill Sections.	132,	138
X.	Compt'n by Henck's Formula.	Width of Section on top.	Centre-Height.	Cubic Yards.	(22) to (24),	66	71,	67	109,	103	72, 73,	69 70	Side-Hill and Irregular Earthwork.	74–75,	71
XI. & XII.	Prelim. Est., No. 1.	Centre-h'ts.†	Surface-Slope.	" "	(38),	90	96,	90	(*Gen'al*)‡		94,	89	Use of Odometer.	97,	92
	" " No. 2.	" "†	" "	" "	(36), (37),	88	93,	88	(*Gen'al*)‡		94,	89	" " "	94,	89
	" " No. 3.	$\frac{C}{d'}$ §	" "	Coefficient.	(39),	96	104,	97	(*General*)						
	" " No. 4.	Cubic Yards.	Coefficient.	Cubic Yards.	(40),	96	104,	98	(*General*)						

* Or *vice versa*. † To intersection of side-slopes. ‡ Rules for application to other side-slopes, par. 111, pages 104. § See par. 103, p. 96.

PLATE I.

Diagram of Cross Sections. 14; 1½ to 1

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PLATE I.
Diagram of Cross Sections. 14; 1½ to 1.

PLATE II.

Diagram of Cross Sections. 15; 1½ to 1.

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PLATE II.

Diagram of Cross Sections. 15; 1½ to 1.

PLATE III.

Diagram of Cross Sections. 18; 1½ to 1.

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PLATE III.

Diagram of Cross Sections. 18; 1½ to 1.

PLATE IV.

DIAGRAM OF CROSS SECTIONS. 20; 1½ TO 1.

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PLATE IV.
DIAGRAM OF CROSS SECTIONS. 20; 1½ TO 1.

PLATE V.

Diagram of Cross Sections. 18; 1¼ to 1.

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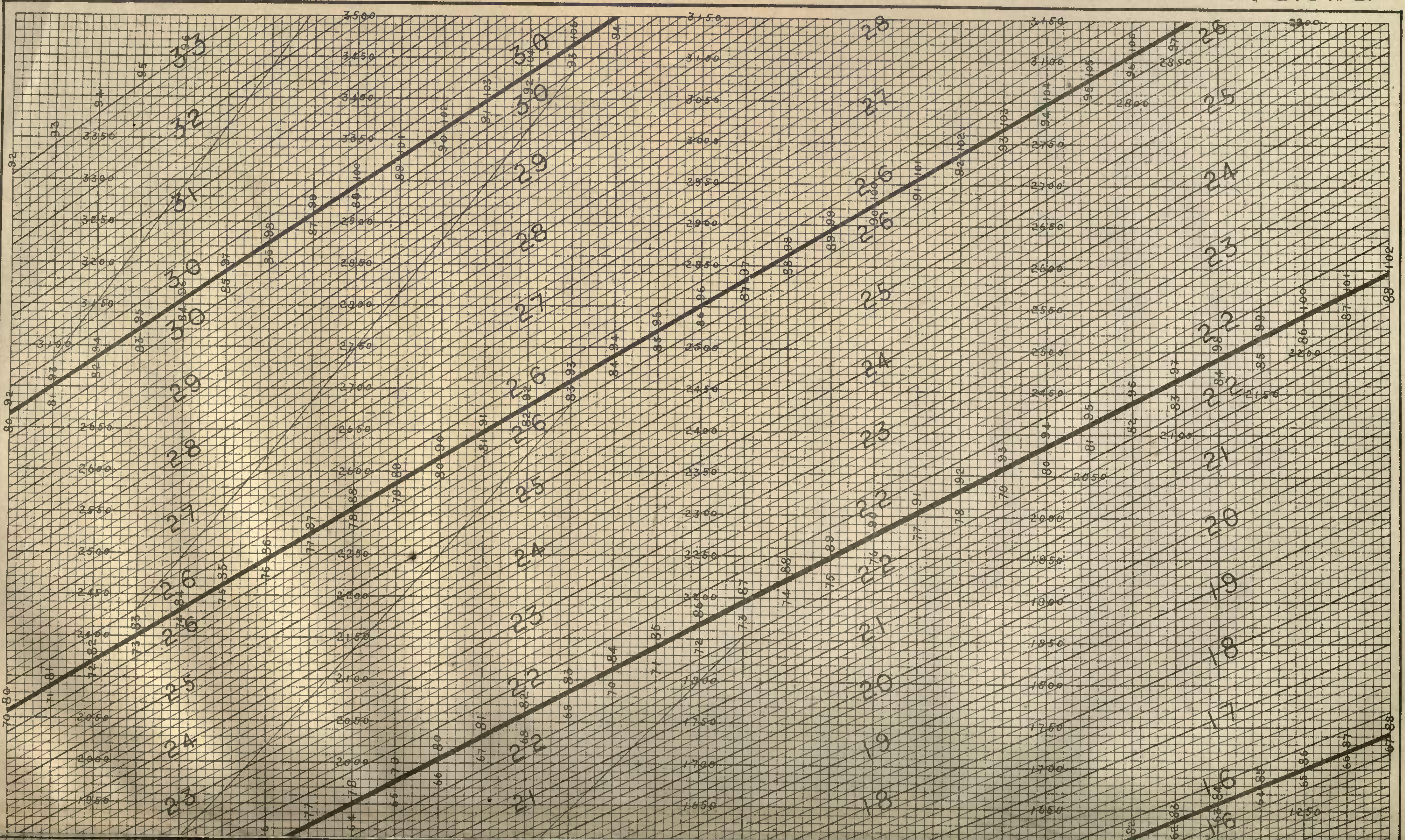
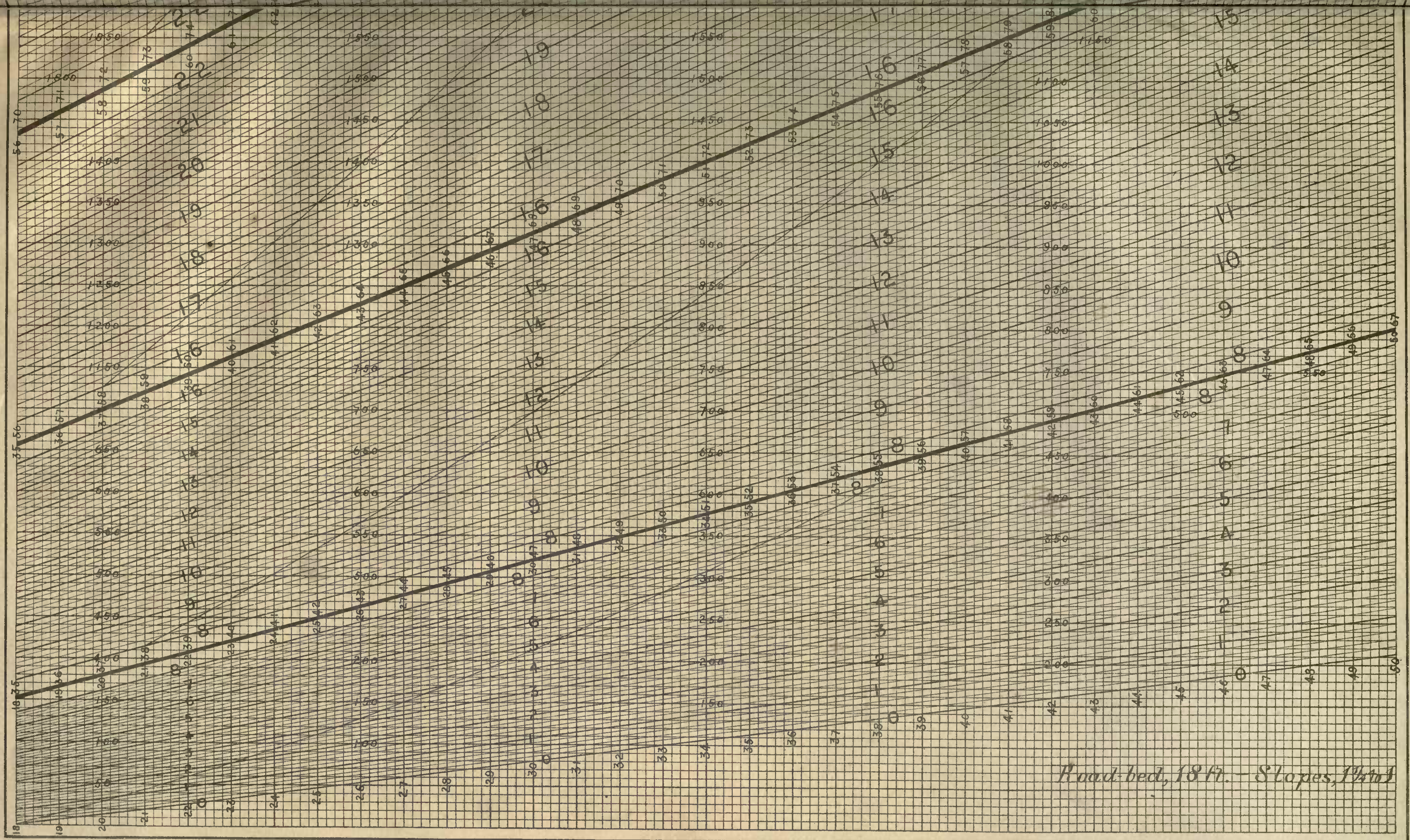
PLATE V.

Diagram of Cross Sections. 18; 1¼ to 1.

PLATE V.

DIAGRAM OF CROSS SECTIONS. 18: 1¼ to 1.





Road-bed, 18 ft. — Slopes, 1½ to 1

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PLATE VI.

Diagram of Cross Sections. 18; 1 to 1.

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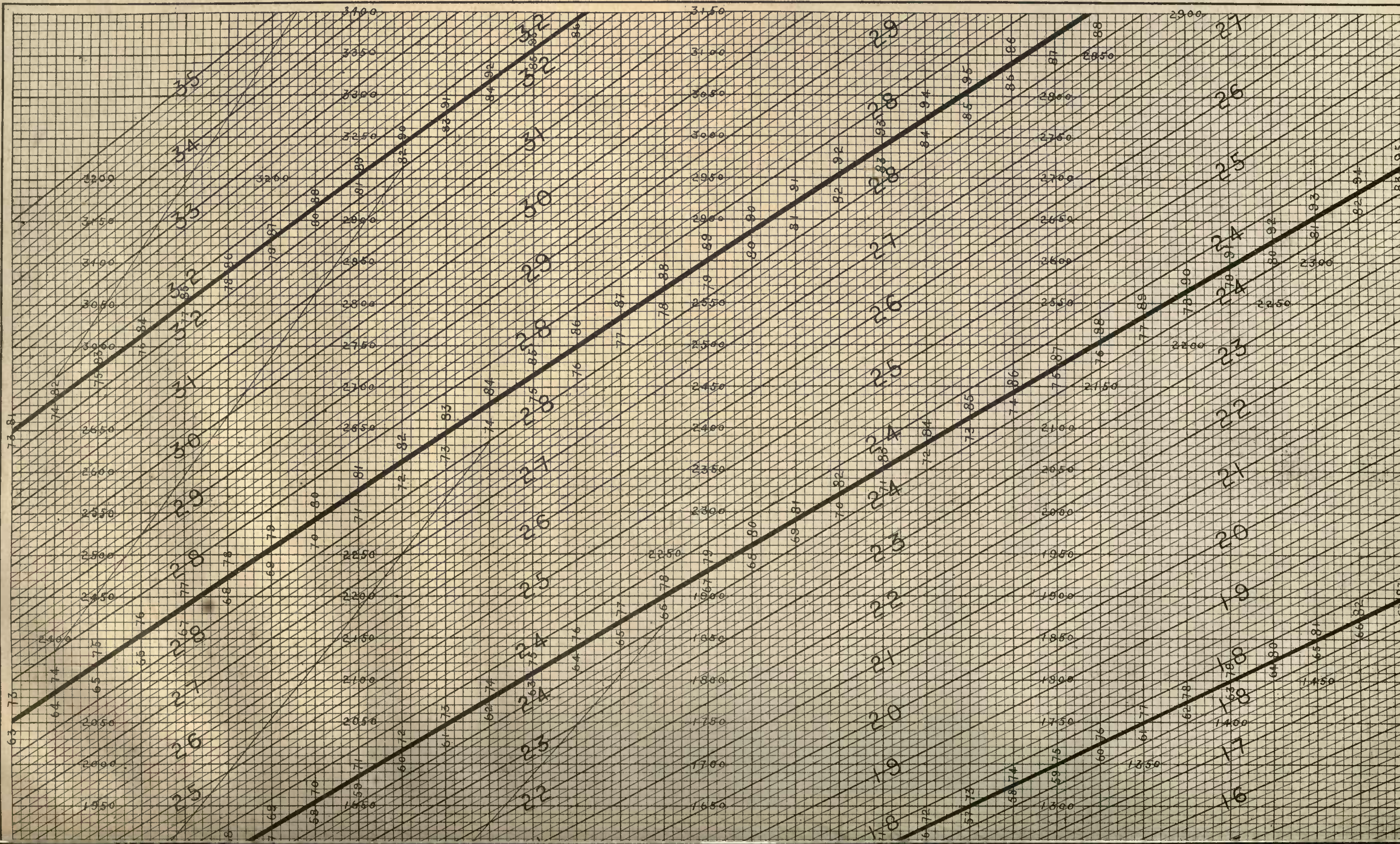
PLATE VI.

Diagram of Cross Sections. 18; 1 to 1.

DIAGRAM OF CROSS SECTIONS. 18: 1 to 1.



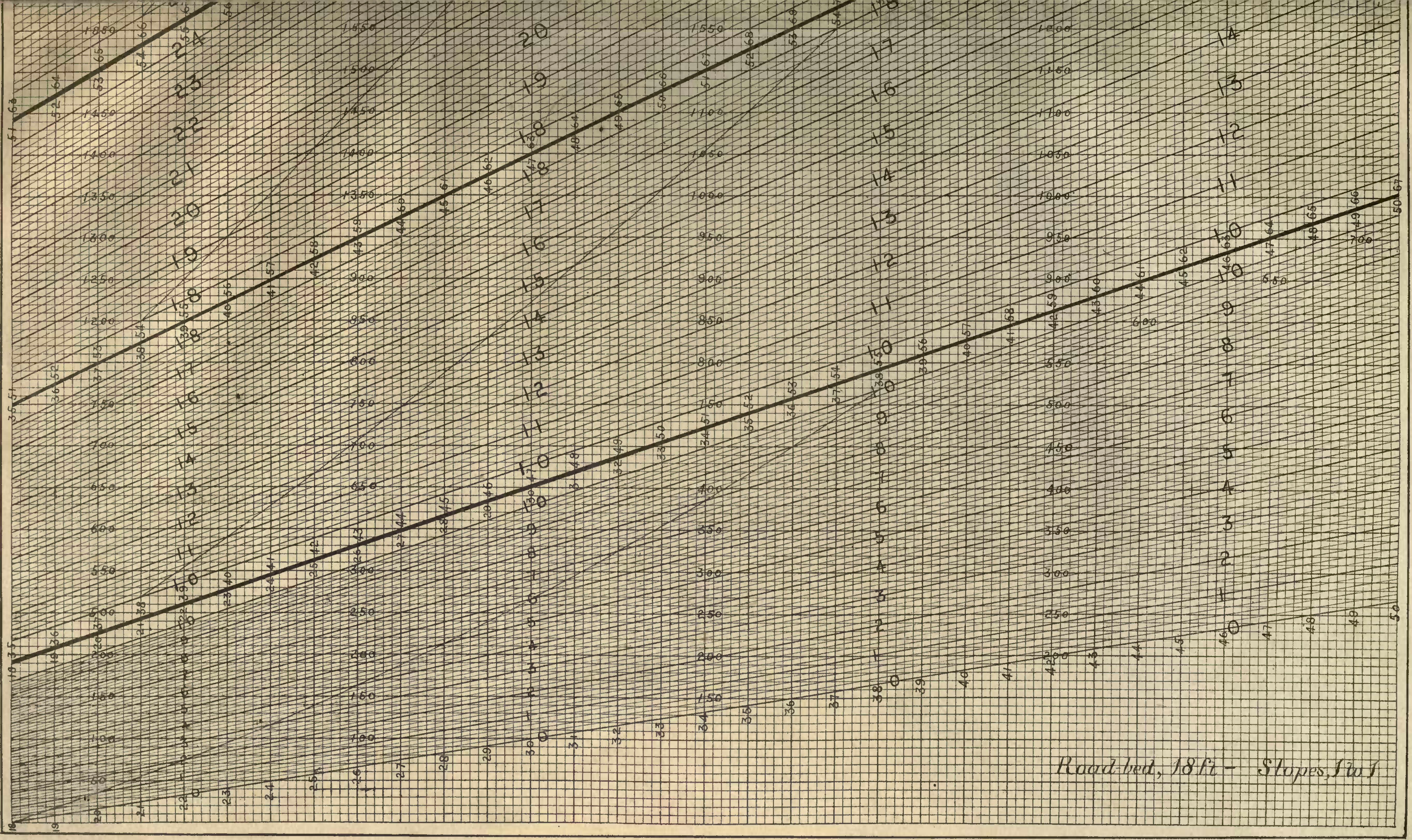


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PLATE VII.

Diagrams of Side Hill Cross Sections.

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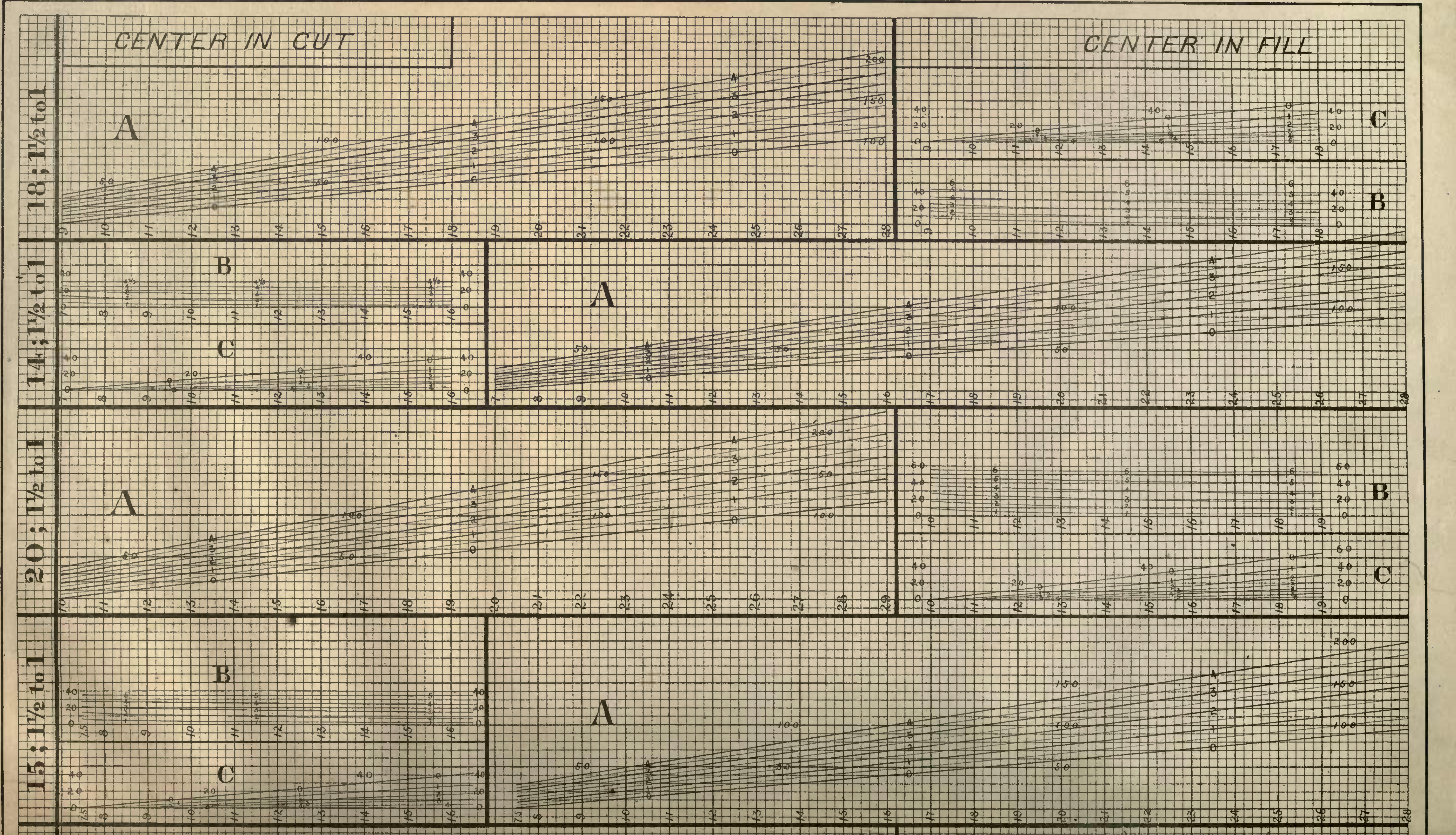
PLATE VII.
Diagrams of Side Hill Cross Sections.

PLATE VII.

DIAGRAMS OF SIDE HILL CROSS SECTIONS.



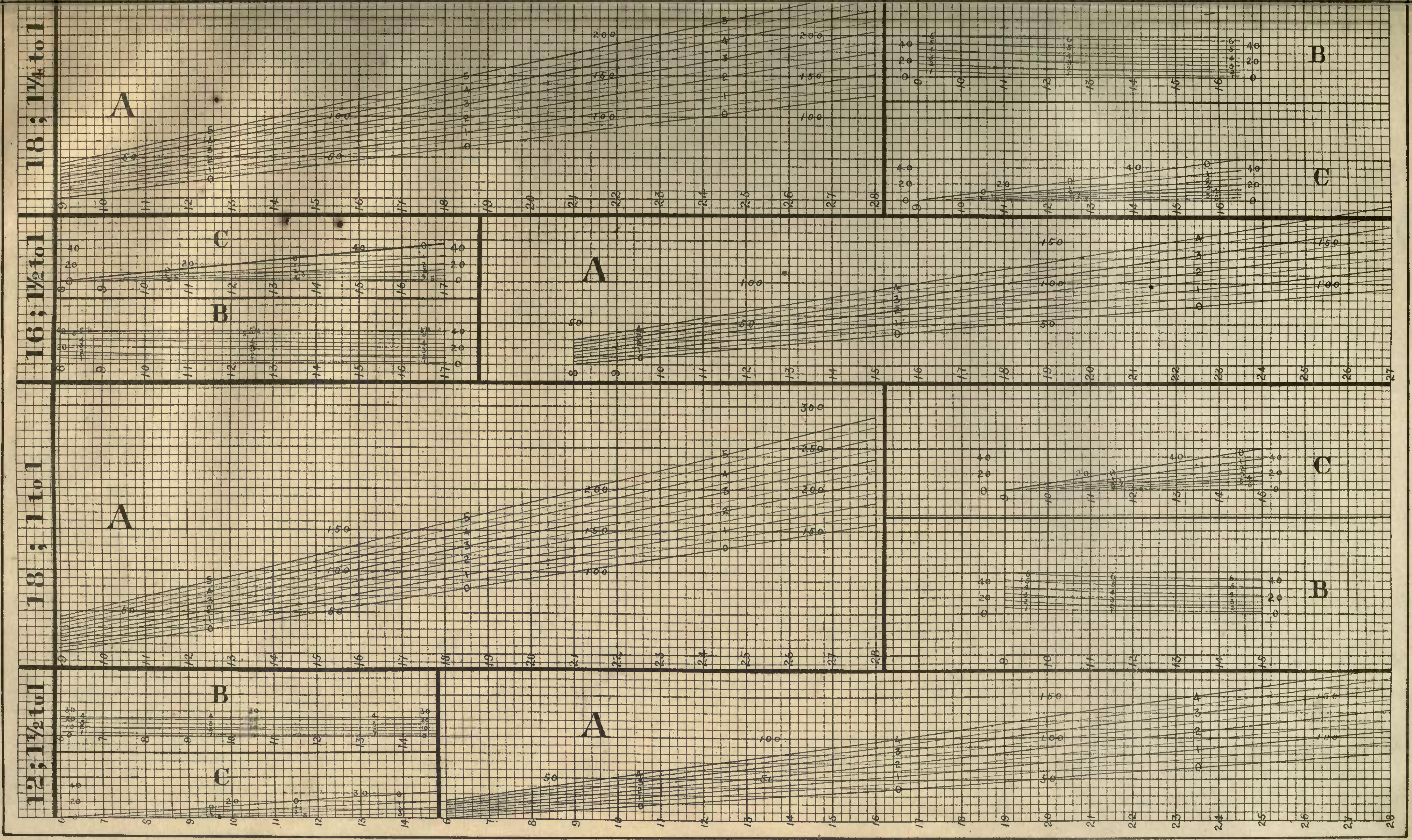


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PLATE VIII.

DIAGRAM OF TRIANGULAR PRISMS.

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PLATE VIII.
DIAGRAM OF TRIANGULAR PRISMS.

PLATE VIII

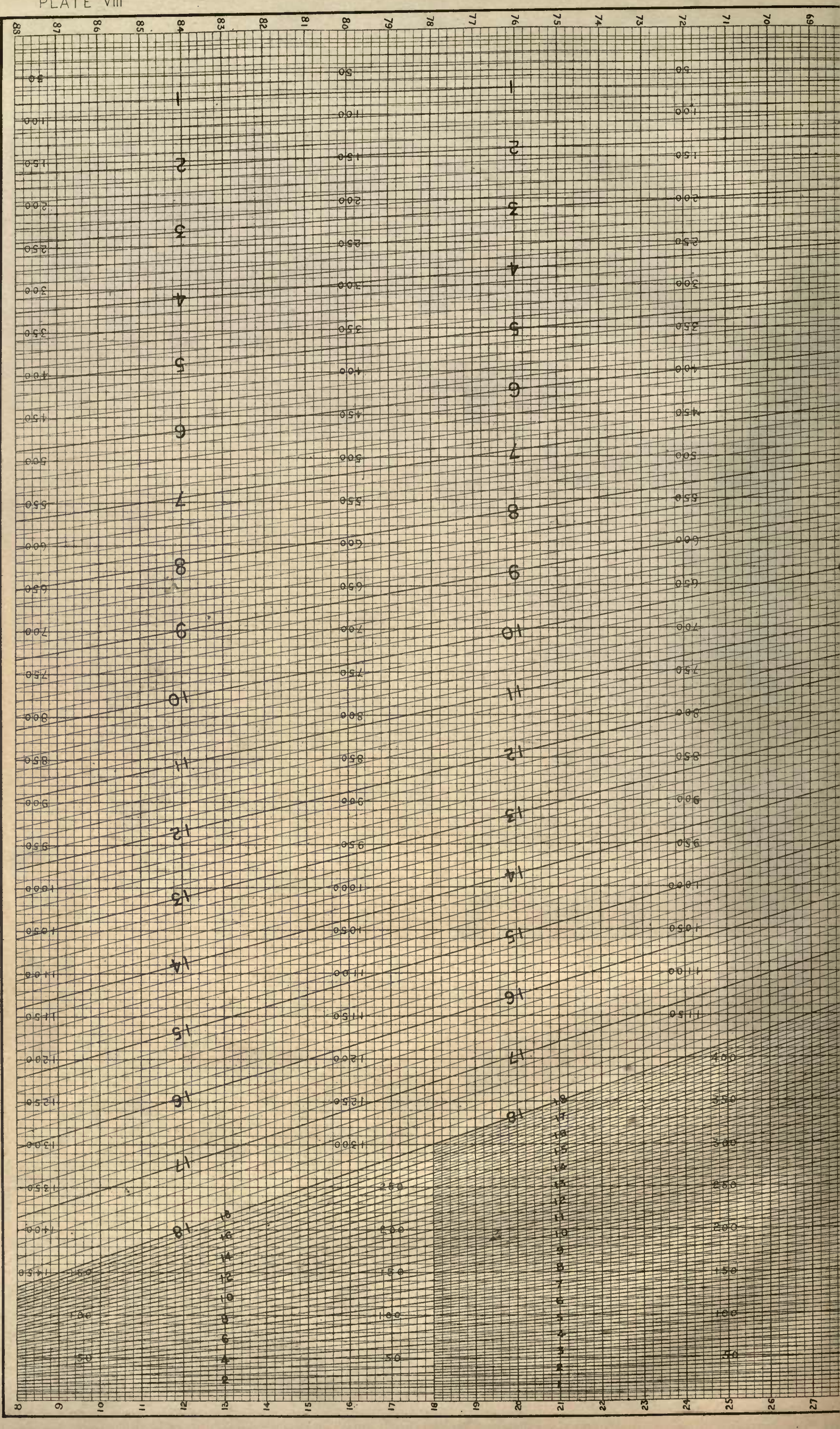
88 87 86 85 84 83 82 81 80 79 78 77 76 75 74 73 72 71 70 69
8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27
50 100 150 200 250 300 350 400 450 500 550 600 650 700 750 800 850 900 950 1000 1050 1100 1150 1200 1250 1300 1350 1400 1450
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
400 350 300 250 200 150 100 50
2 4 6 8 10 12 14 16 18

DIAGRAM OF TRIANGULAR PRISMS.

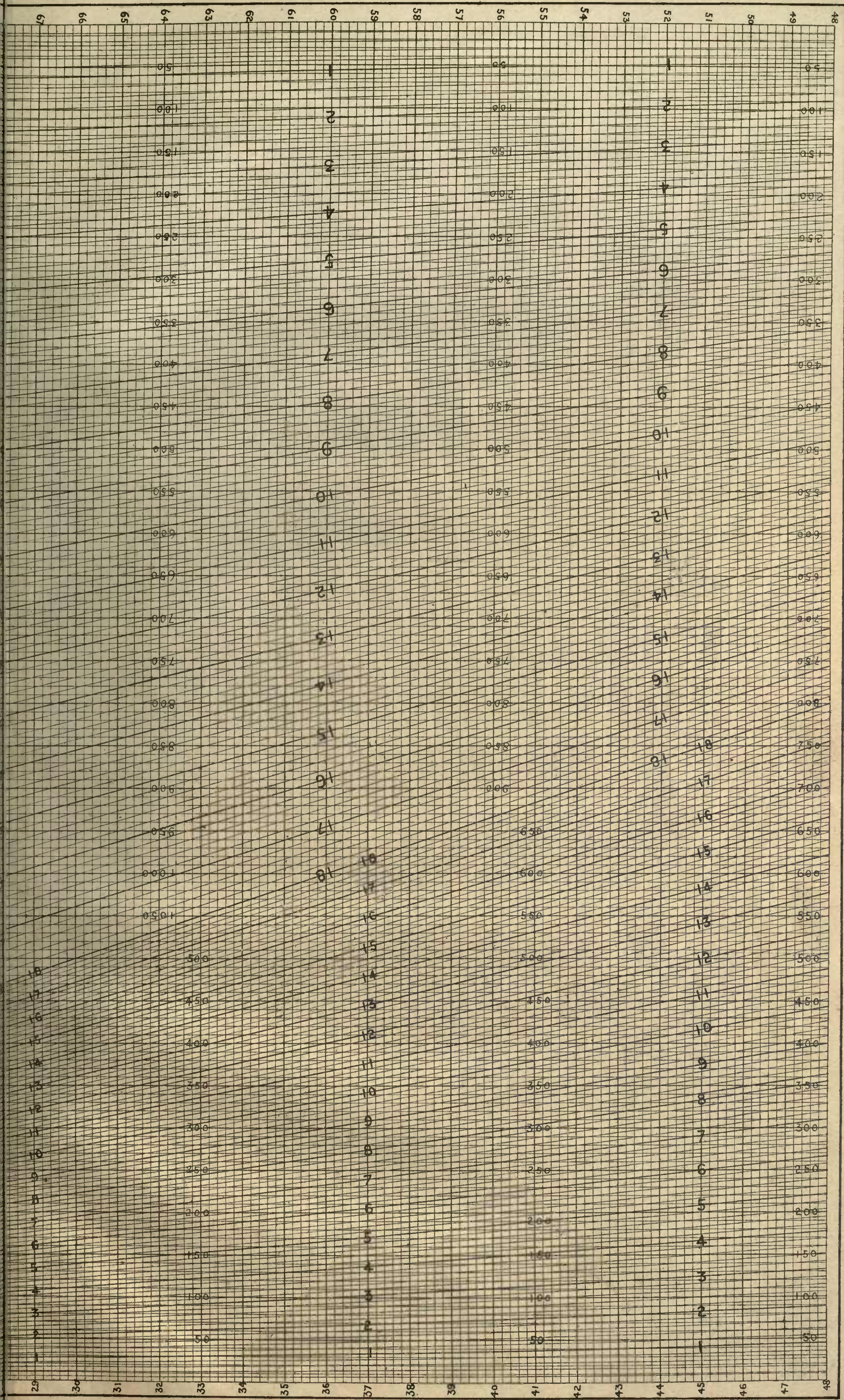

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PLATE IX.

DIAGRAMS OF PRISMOIDAL CORRECTION, ETC.

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PLATE IX.
DIAGRAMS OF PRISMOIDAL CORRECTION, ETC.

PLATE IX.

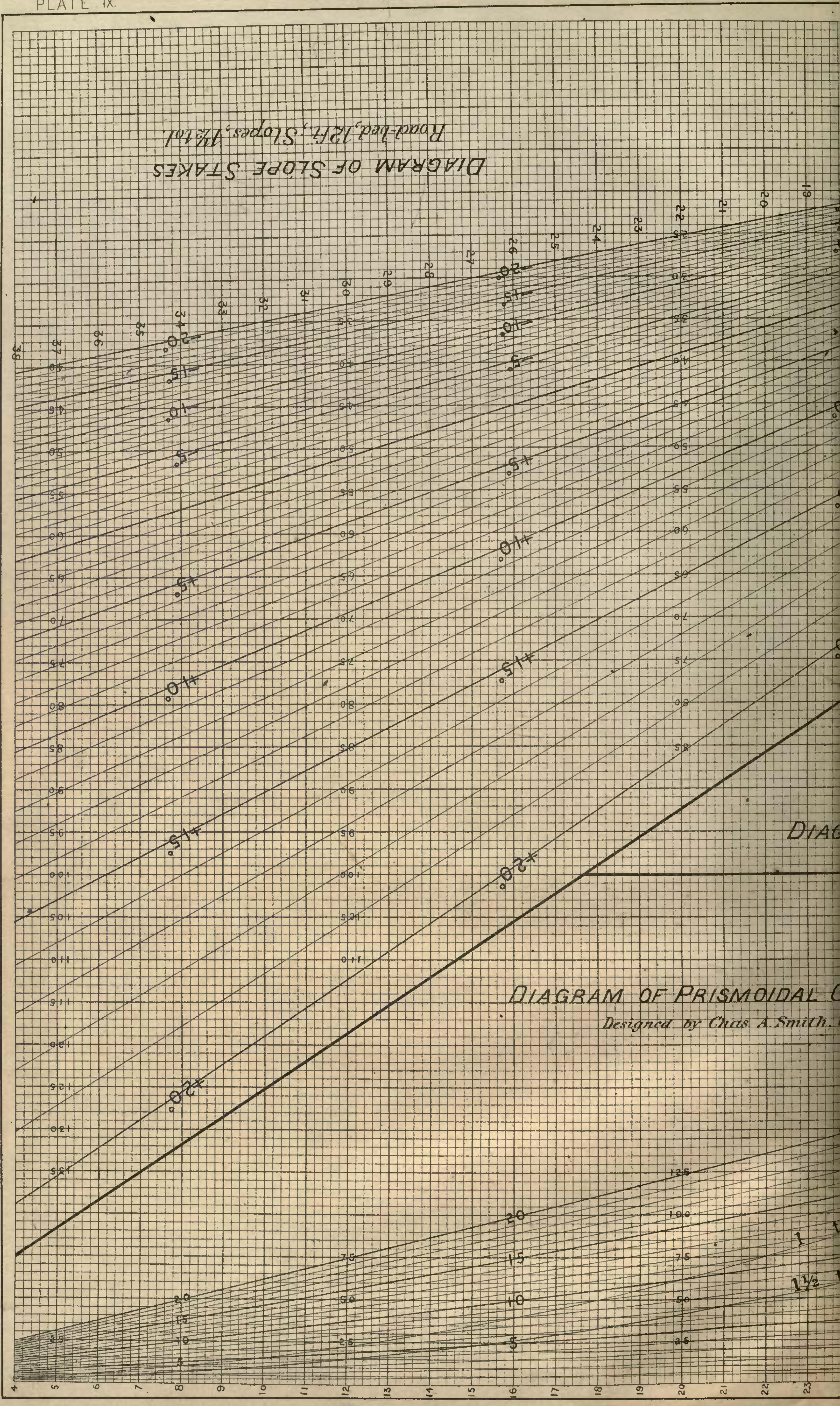
DIAGRAM OF SLOPE STAKES
Road-bed, 12 Ft.; Slopes, 1½ to 1.
DIAGRAM OF PRISMOIDAL C
Designed by Chas. A. Smith.
DIAG
+20°
+15°
+10°
+5°
0°
1
1½
4
5
6
7
8
9
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DIAGRAMS OF PRISMOIDAL CORRECTION, &c.

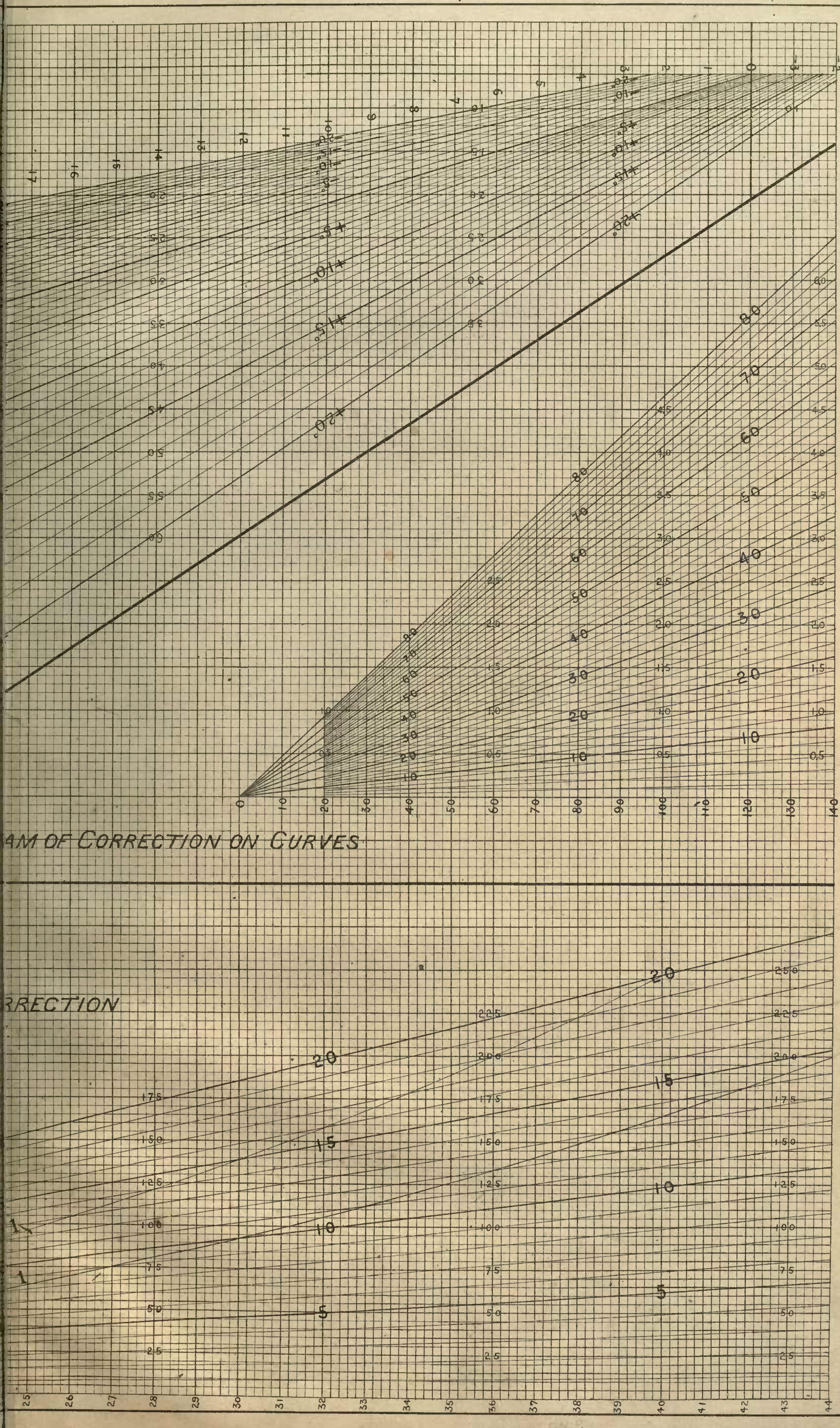

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PLATE X.

DIAGRAM FOR COMPUTATION BY HENCK'S FORMULA. 18; 1½ TO

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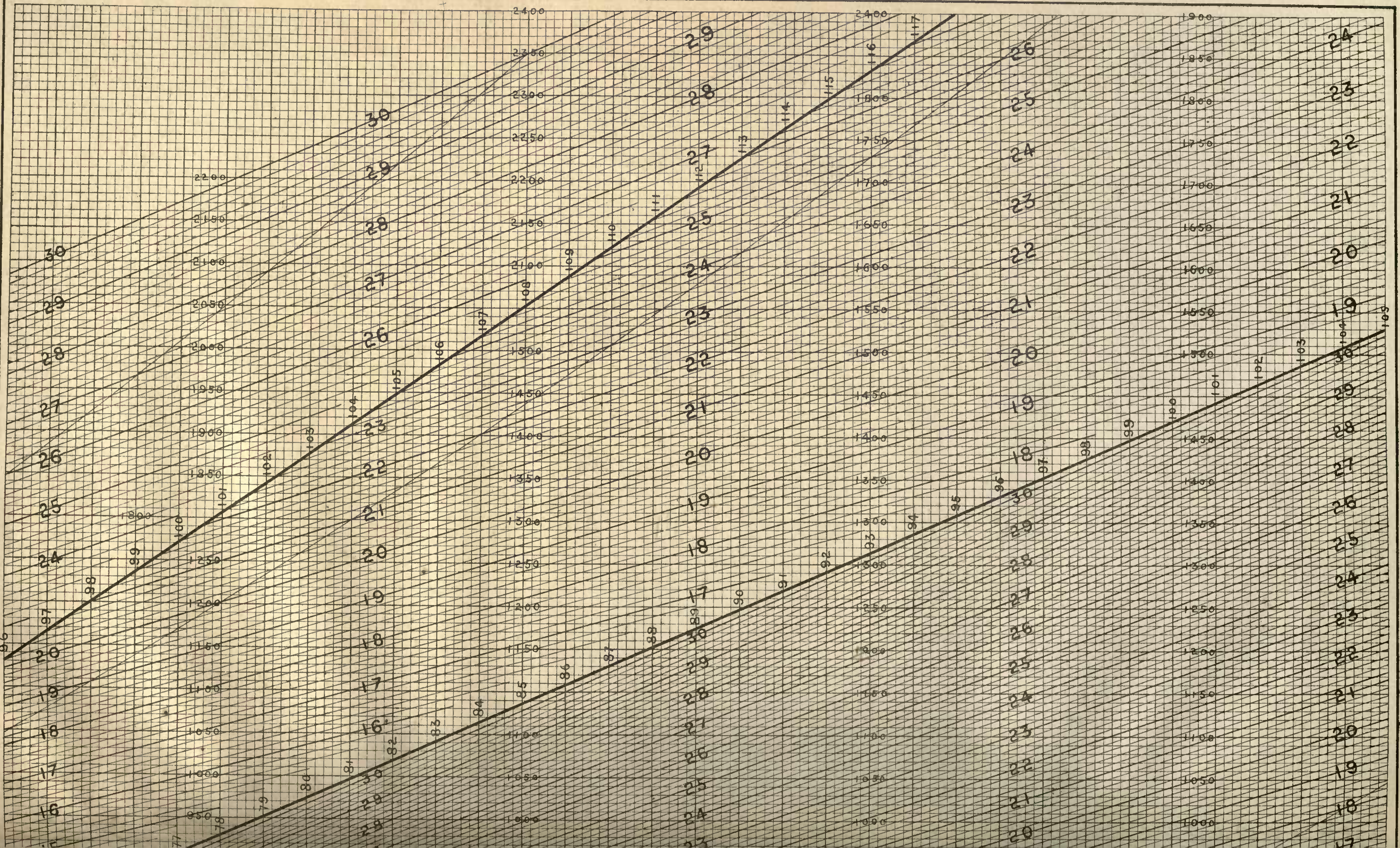
PLATE X.

DIAGRAM FOR COMPUTATION BY HENCK'S FORMULA. 18; 1½ TO 1.

PLATE X.

DIAGRAM FOR COMPUTATION BY HENCK'S FORMULA. 18; 1½ to 1.



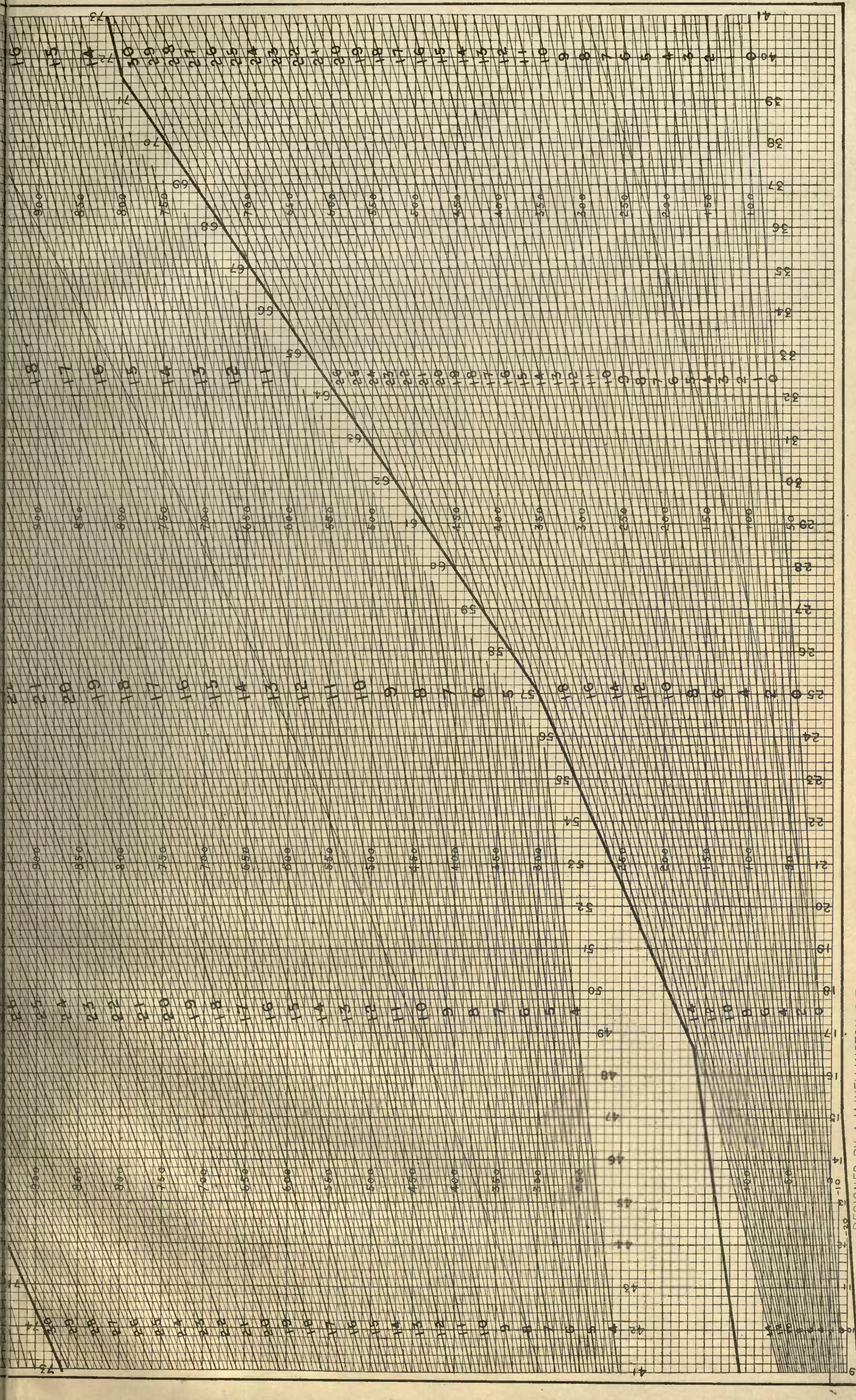


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PLATE XI.

Diagrams for Preliminary Estimates. 1½ to 1.

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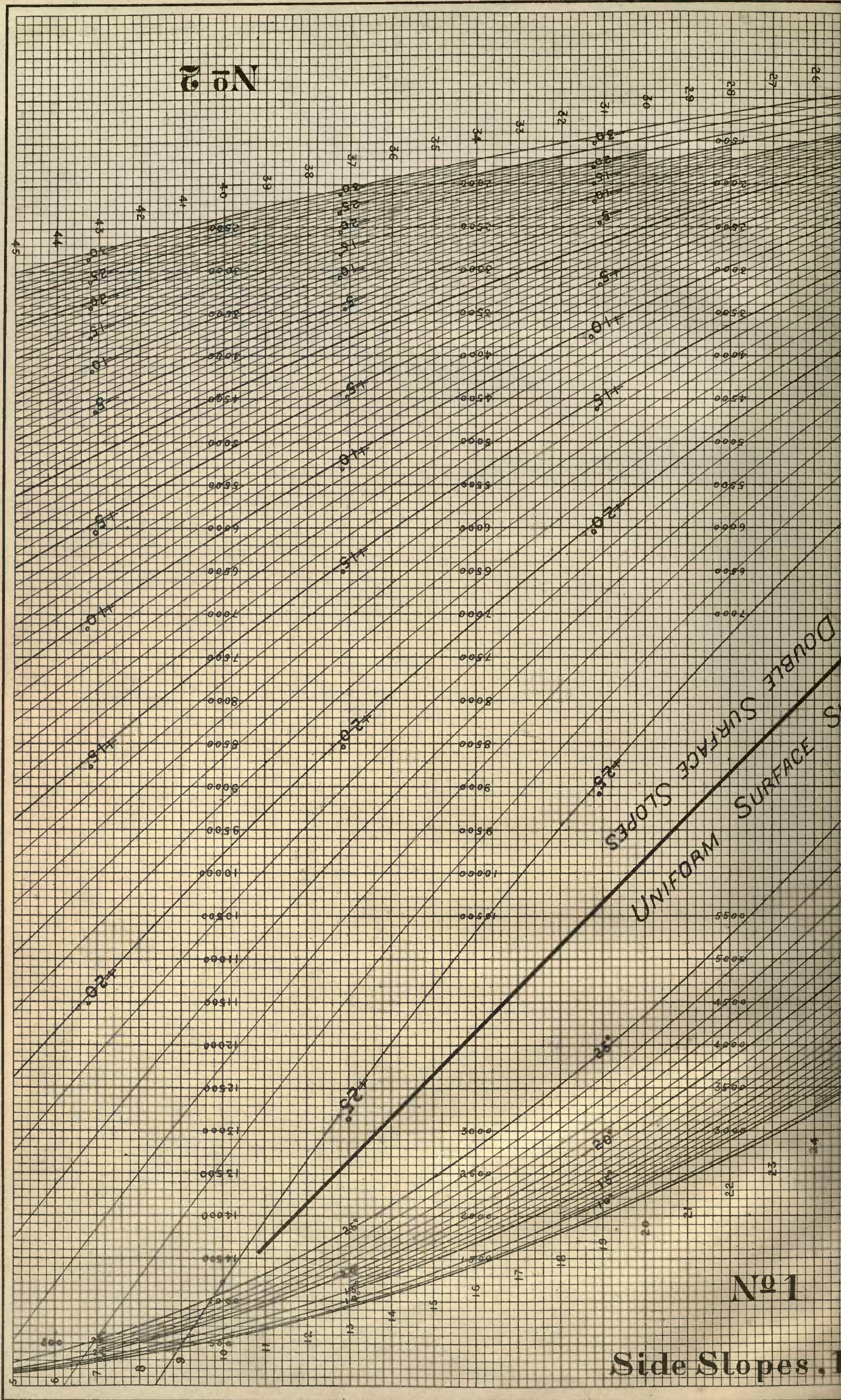
PLATE XI.
Diagrams for Preliminary Estimates. 1½ to 1.

PLATE XI.



Side Slopes,

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DIAGRAMS FOR PRELIMINARY ESTIMATES, 1½ to 1.

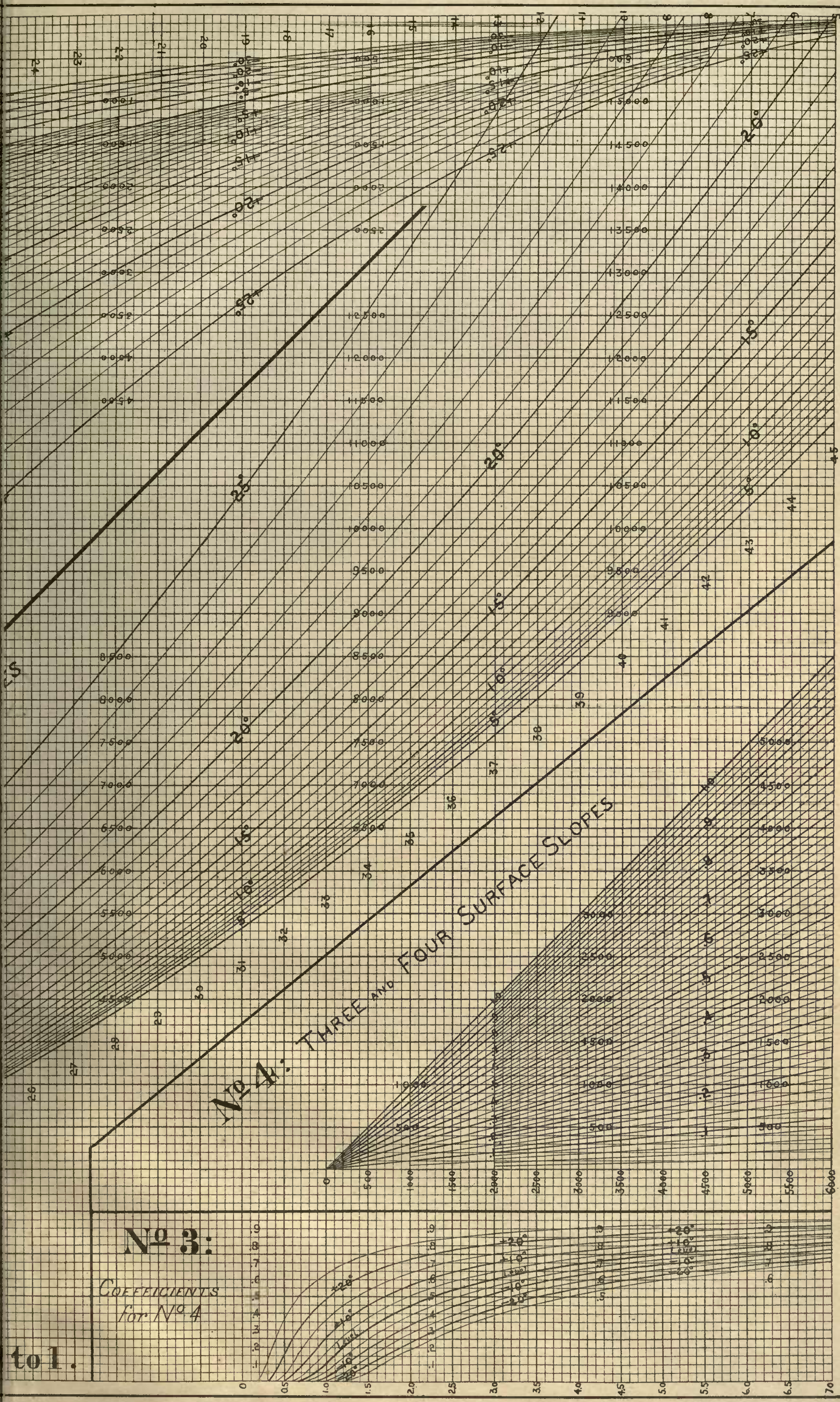

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PLATE XII.

DIAGRAMS FOR PRELIMINARY ESTIMATES. 1 TO 1, AND 1-4 TO 1.

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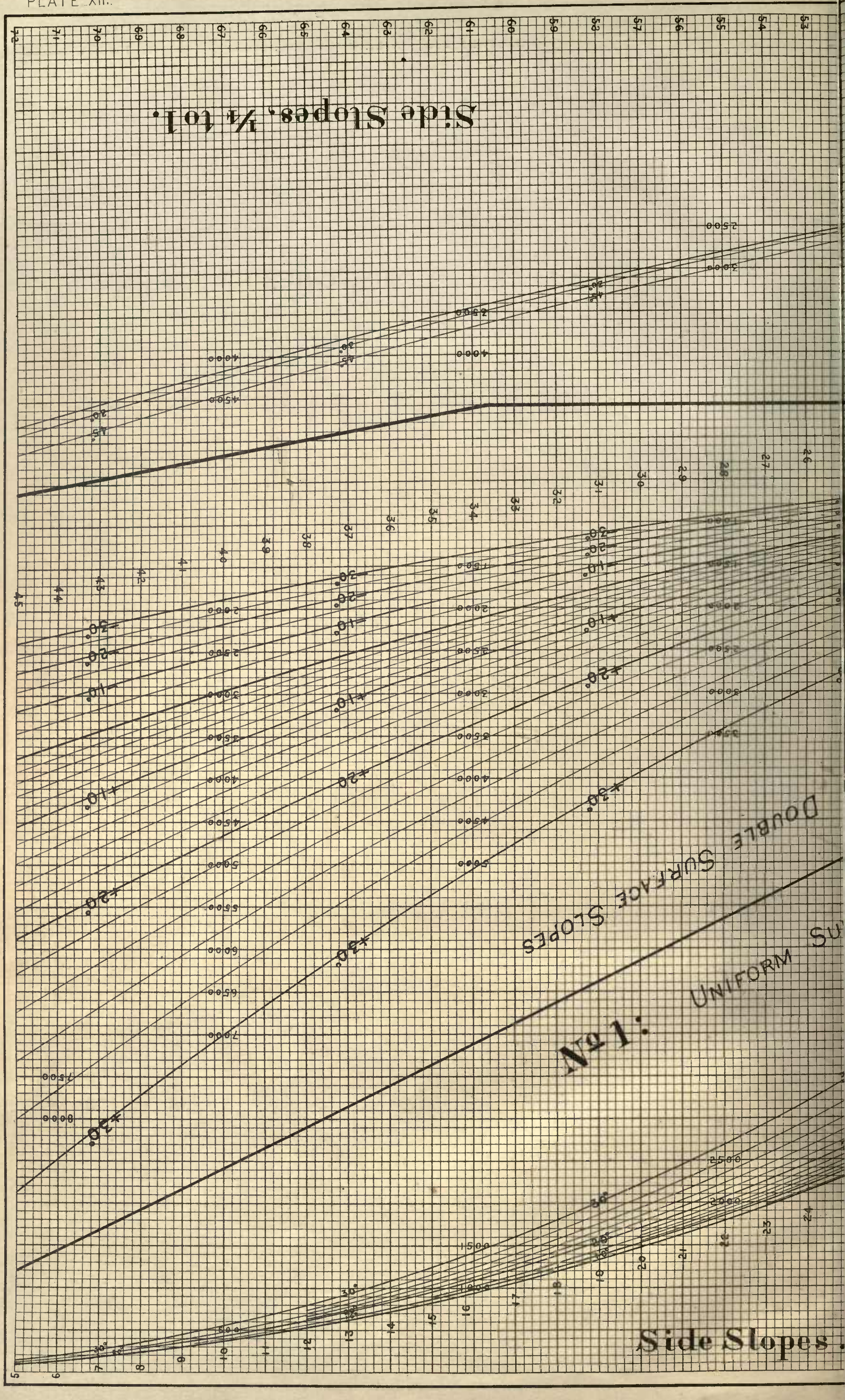
PLATE XII.
DIAGRAMS FOR PRELIMINARY ESTIMATES. 1 TO 1, AND ¼ TO 1.

PLATE XII.



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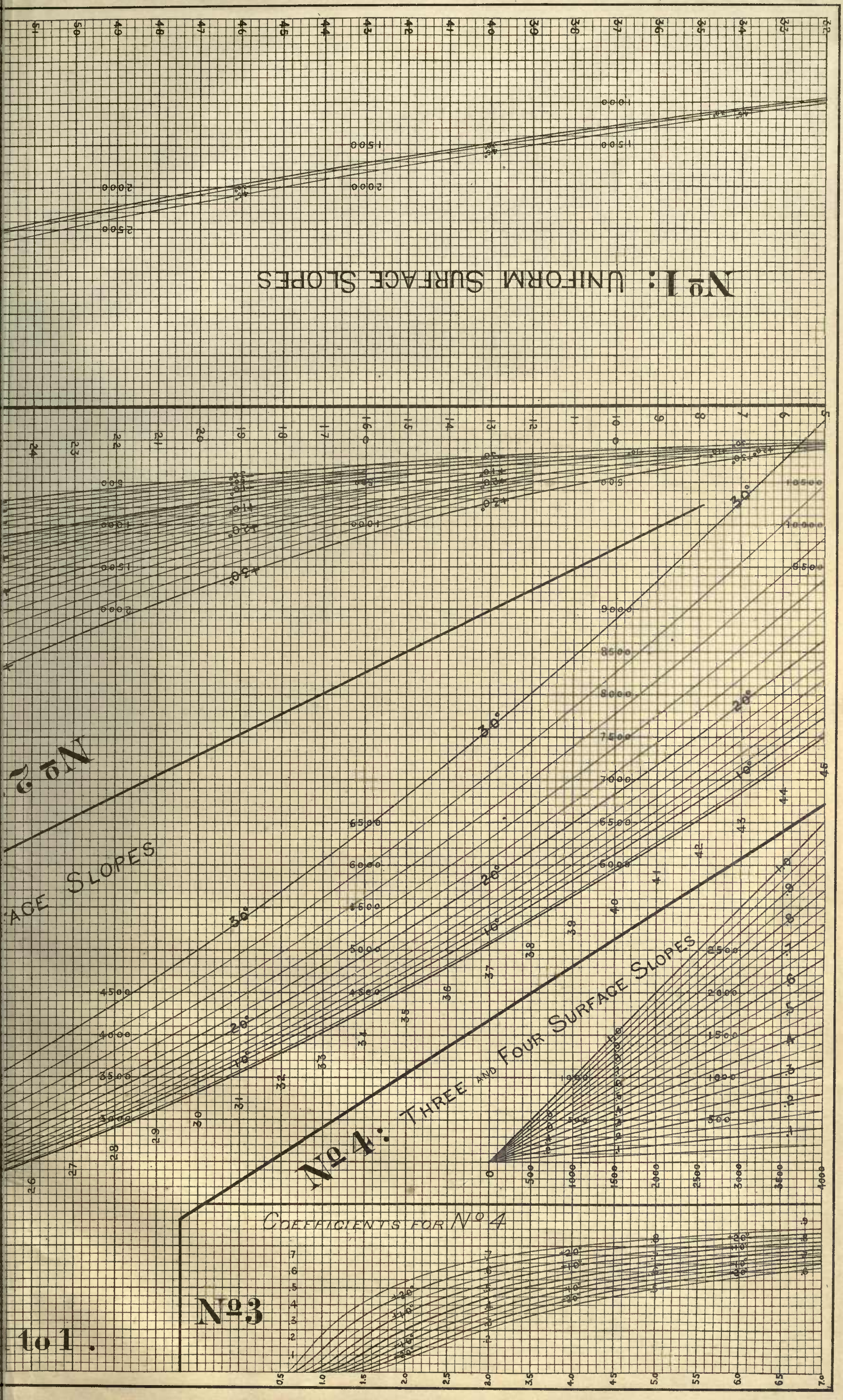
DIAGRAMS FOR PRELIMINARY ESTIMATES. 1 to 1, and 1/4 to 1.



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